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10/528,734	02/21/2006	Pernille Baardseth	BAAR3002/REF	8554

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EXAMINER	
THAKUR, VIREN A	

ART UNIT	PAPER NUMBER
1782	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,734	BAARDSETH ET AL.	
	Examiner	Art Unit	
	VIREN THAKUR	1782	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 13-20 have been cancelled and new claims 21-35 are currently pending. As a result of the amendment to the claims, the rejections set forth in the previous Office Action, mailed March 30, 2010 have been withdrawn and new grounds of rejections have been set forth below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 21-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaaber ("Potato Research") in view of "Health Canada" and Grivas et al. ("Acrylamide in Food") and in further view of Hong et al. (US 4751093).

Regarding claims 21 and 23, Kaaber teaches fermenting potatoes using lactic acid bacteria (see page 40, "Materials and methods"). It is noted that the lactic acid bacteria taught by Kaaber has been used to lower the reducing sugar content of the potatoes (see page 40, 1st and 2nd paragraphs). After fermenting the potatoes using lactic acid bacteria, Kaaber teaches frying the fermented potatoes at 170°C (see page 40, "Frying"). It is noted that the fermenting step taught by Kaaber would inherently have reduced acrylamide in the potatoes to some degree, since Kaaber uses lactic acid bacteria such as Lactobacillus NCIMB 40450, similar to applicants. Furthermore, it is noted that "Health Canada" teaches that when "asparagine is heated with glucose, a 'reducing' sugar, acrylamide is produced" and Grivas et al. further evidences this point by stating that acrylamide formation is increased by increased concentration of reducing sugar and thus strongly supports the Maillard reaction mechanisms (see page 17, first paragraph). Grivas even teaches on page 17 that data and observations indicate that acrylamide formation is increased by increased concentration of reducing sugar in the raw materials (see top of page 17). Therefore, since Kaaber similarly employs lactic acid bacteria fermentation of cut potatoes and since Kaaber reduces the levels of reducing sugars and thus reduces the Maillard reaction, it would have been expected that the content of acrylamide would also have been reduced.

Nevertheless, claim 21 differs from Kaaber in specifically reciting the step of chopping the potatoes in the form of batons having a cross-sectional area of 10 to 100 mm^2. It is noted however, that Hong et al. teaches that it has been conventional to chop the potatoes into shapes such as sticks that are commonly referred to as French Fries (see column 5, lines 51-54). Since Kaaber already teaches cutting the potatoes and even teaches frying the potatoes to make a fried potato product, the particular shape into which the potato was cut and the particular size of that cut would thus have been obvious to one having ordinary skill in the art depending on particular shape and size desired of the fried potato products.

Regarding the step of frying to produce part-cooked French fried potatoes, it is noted that Hong et al. teaches that it has been conventional to par-fry (i.e. partially cook in oil) potato strips (i.e. French fries) or potato slices (column 9, lines 37-44) which can be subsequently finished in hot oil or an oven for finishing the cooking (see column 9, lines 44-54 and column 11, lines 1-16). Since the product has been partially cooked, it reduces the finish frying time (see column 11, lines 17-31). Hong et al. further teaches that this improves frying of potatoes in restaurants and homes (see column 1, lines 31-34). To thus modify Kaaber who teaches fully frying, and to par-fry the potatoes would have been obvious to one having ordinary skill in the art, for the purpose of allowing the consumer to be able to finish the cooking of the potatoes at home.

Regarding claims 22 and 23 which recite cooking the part-cooked French fried potatoes, it is noted that Hong et al. already teaches that after par-frying the potatoes, that they are further finished by frying (see column 9, lines 1-14).

Regarding claims 24-26, the combination as applied above teaches French fries produced by the above process.

Regarding claim 27, it is noted that Kaaber already teaches fermentation for up to 48 hours for lowering the reducing sugar content (see Table 1, "Fermentation Period"), thus encompassing the claimed time period of 1-6 hours. Kaaber also teaches a fermentation temperature of 23°C. Kaaber also teaches that concentrations of reducing sugars removed can be varied by changing the fermentation time and can further be varied based on the desired color to be achieved after frying (see page 43-44 under "Discussion", "Therefore, it should be..."). It is further noted that the particular fermentation time for lowering the reducing sugars would also have been a function of the particular content of reducing sugars present in the potato prior to fermentation. That is, different potatoes have different initial amounts of reducing sugars, and therefore the particular fermentation times would also have been a function of the initial content of reducing sugars and the desired degree of reduction of the reduction sugars. The fermentation time would also have been a function of the particular amount of potatoes that are fermented since this would also have affected the total initial reducing sugar content. Also, the rate of fermentation desired would also have affected the fermentation times. The fermentation time and rate would also have been a function of the operating conditions such as the pH, temperature and the amount of potatoes to be fermented, as well as the amount of fermentation bacteria present. For instance, speeding up the rate at which the bacteria consumed the sugars would have shortened the fermentation time. Therefore, to modify Kaaber and only ferment for 1-6 hours and

at between 25-35°C would thus have been an obvious result effective variable, routinely optimized by experimentation for the purpose of achieving the desired reduction in sugars in a given amount of time.

It is further noted that by encompassing the claimed fermentation times and by employing the same type of lactic acid bacteria as applicants' that Kaaber would also have achieved reduction in acrylamide. Also, in view of "Health Canada," who teaches that the reaction of reducing sugars and asparagine result in the formation of acrylamide, and Grivas who teaches that acrylamide formation is increased by increasing concentrations of reducing sugars, which thus supports that the Maillard reaction mechanism can form acrylamide, to thus employ a particular time of fermentation would also have been routinely optimized by experimentation based on the desired reduction in the reducing sugars, which thus would have affected the amount of acrylamide formed after frying.

Regarding claim 28, which further recites that the frying temperature is above 150°C, it is noted that Kaaber already teaches frying at 170°C (see page 40, "Frying").

Regarding claim 29, which further recites that the aqueous solution is 1% sodium chloride, it is noted that Kaaber teaches an aqueous solution that is 1.5% sodium chloride (see page 40, "Bacterial inoculum and fermentation"). It is not seen that employing 1% sodium chloride, as claimed would have provided a patentable distinction between the claims and Kaaber, since Kaaber still encompasses the claimed fermentation time and even teaches employing the same bacteria as applicants. Regarding the particular concentration of the Lactobacillus strain of 1x10^6 recited in

claim 29, it is noted that Kaaber teaches employing 1x10^7 (see page 40, "Bacterial inoculum and fermentation"). It is noted, that employing 1x10^7 versus 1x10^6 cell/mL is not seen to provide a patentable distinction between the claims and Kaaber, especially since the amount of bacteria employed would have been a function of the particular desired rate and time for fermentation, for the purpose of achieving the desired degree of reduction in sugar. This would also have been a function of the initial amounts of sugar present. For instance, if less amounts of reducing sugars were initially present prior to fermentation, then it would have been obvious to the ordinarily skilled artisan that lower concentrations of the bacterial could have been employed based on the particular time desired for lowering the levels of the reducing sugars to the desired degree. Therefore, to modify Kaaber and employ a particular concentration of the bacteria would have been an obvious result effective variable, routinely optimized by experimentation for the purpose of achieving the desired reduction.

Regarding the particular process conditions recited in claims 27-29, it is noted that these process parameters of fermentation time are known result effective variables. With all other conditions being the same, if the process time were low it would result in higher sugars (and thus acrylamide formation), while increased fermentation times would result in lower reducing sugar content (and thus lower acrylamide formation). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to determine the optimal value for the fermentation time used in the process of Kaaber through routine experimentation for the purpose of lowering the

reducing sugar content to the desired degree, as well as to lower the acrylamide formation to the desired degree.

Regarding claims 22,30 and 33, the combination of Kaaber and Hong et al. already teaches packaging par-fried French fries (see column 11, lines 1-3), which can then be finished cooked by the consumer at home, by frying.

Regarding claims 31 and 32, Kaaber teaches that the bacterium is Lactobacillus plantarum (see page 40 “Bacterial inoculum and fermentation”). Regarding claim 34, which recites finishing the cooking by baking, it is noted that Hong et al. already teaches that the part-cooked French fries can be finished cooked by either of baking or frying (see column 9, lines 49-54 and column 11, lines 4-16). Since Kaaber already teaches frying, to thus employ baking would not have provided a patentable distinction over the prior art combination, since baking and frying have both been recognized as conventional steps for finishing the cooking of part cooked French cut potatoes.

Regarding claim 35, the combination of Kaaber and Hong et al. already teaches deep frying which can be performed in a restaurant (see Hong, column 9, lines 44-49 and column 1, lines 31-34; column 2, lines 7-10).

Response to Arguments

5. Applicant's arguments filed September 30, 2010 have been fully considered but they are not persuasive.

6. On page 6 of the response, applicants argue that there is no specific disclosure in Kaaber relating to acrylamide reduction. It is noted however, that both applicants and Kaaber are treating slices of potatoes with the same bacteria. Although not recited in the independent claims, it is noted that Kaaber even encompasses the fermentation times employed by applicants. Therefore, it is noted by fermenting potatoes using the same bacteria as applicants that the fermentation in Kaaber would also have resulted in a reduction in the formation of acrylamide when frying the potato slices. Even further, it is noted that Health Canada has also recognized that the reaction of asparagine with reducing sugars, such as glucose in potatoes would result in the formation of acrylamide, therefore, in view of this teaching, it would have been obvious to one having ordinary skill in the art that reduction of the amount of one of the two reactants which would have formed acrylamide would nonetheless have reduced the formation of acrylamide since the reactant in lesser amount would reasonably have reduced the reaction yield compared to when said reactant amount was not reduced. Therefore, although Kaaber might not specifically mention the phrase “reducing acrylamide production” it is noted that in view of Health Canada, that the process of Kaaber would indeed have resulted in a reduction in the formation of acrylamide.

7. On page 7 of the response, applicants argue that at the priority date of applicants’ invention, the mechanism for the formation of acrylamide was far from clear and there was no universally accepted reaction mechanism for acrylamide formation. Applicants further argue that while the reaction between asparagine and glucose may

have been one possible route to the formation of acrylamide, many others were under consideration and thus, knowledge of one of many possible reaction mechanisms would not necessarily lead to the expectation of the presently claimed invention.

This argument has been considered but is not persuasive. It is noted that the references, such as Health Canada reasonably lead one having ordinary skill in the art to reduce the formation of acrylamide by lowering the availability of one of the reactants in the acrylamide reaction. It is noted that this is also what Kaaber has done.

8. On page 8 of the response, regarding the Afssa reference, applicants assert that the examiner's selection of the Maillard reaction from this document relies on hindsight, since those skilled in the art would readily appreciate its speculative nature and the possibility that other reaction mechanisms not involving amino acids and glucides were equally plausible.

This argument has been considered but is not persuasive, especially since both applicants' and Kaaber are both treating pieces of cut potato with the same lactic acid bacteria and fermenting the potatoes. Therefore, it is not seen that Kaaber would not have reduced the formation of acrylamide while applicants' lactic acid fermentation would have. It is noted that Afssa only further evidenced that the Maillard reaction relates to the formation of acrylamide. Afssa also reasonably leads that the Maillard reaction would result in the formation of acrylamide (see pages 6-7 of the document, and especially the 7th page, 4th full paragraph "The ammonia might then react…"). Applicants make similar arguments with respect to Grivas but these are similarly not

persuasive for the reasons given above. Grivas only further evidenced that the Maillard reaction relates to the formation of acrylamide. Grivas and Afssa are duplicative in nature and were only relied on as evidence that inhibiting the Maillard reaction, which Kaaber already does, would reasonably result in the reduction in the formation of acrylamide. Irrespective of these references, this does detract from the process of Kaaber, who also employs lactic acid bacteria fermentation similar to applicants' and therefore would also have reduced the formation of acrylamide, absent any convincing evidence to the contrary.

9. Regarding "Health Canada" applicants assert on page 10 of the response that not much is known about other possible pathways of formation of acrylamide in foods and that "research is still ongoing." It is noted however, that Health Canada simply further teaches that the formation of acrylamide involves the reaction of amino acids such as asparagine with reducing sugars, such as glucose.

10. Applicants urge on page 10 of the response that in order to arrive at the claimed invention, the skilled person has to make a number of choices from within the teaching of the prior art. Applicants urge that the skilled person must choose which food product to treat, and must also decide which mechanism of acrylamide formation he wishes to inhibit. Applicants further assert that even if the Maillard reaction was the one chosen to inhibit, then the skilled artisan must choose how to inhibit this.

This argument has been considered but is not persuasive. It is noted that the choice of products would not have provided a patentable distinction since the only difference between the process of Kaaber and that of the claims is the particular type of cut. Regarding making a choice of the mechanism of acrylamide formation that was desired to inhibit, it is noted that Kaaber already would have resulted in the reduction in the formation of acrylamide, since both Kaaber and applicants are performing fermentation using the same lactic acid bacteria, as recited in claims 21-23. Therefore, there appears to be no choice to be made regarding the reaction mechanism in Kaaber. Kaaber clearly address the step of fermentation of potatoes with lactic acid bacteria. Absent any evidence to the contrary, Kaaber's fermentation would also appear to have inhibited the reaction mechanism for forming acrylamide in the same manner as applicants. Nevertheless, Health Canada and Grivas only teach that reducing sugars in potatoes are one of the key components to the formation of acrylamide and play a role in the formation of acrylamide. This would reasonably teach the ordinarily skilled artisan that the fermentation and thus reduction in reducing sugars in potatoes would also have lowered the formation of acrylamide upon frying.

Applicants further urge that the art does not teach which of the two reactants may be the limiting reagent in the reaction to form acrylamide.

This argument is not persuasive in view of Kaaber, who already teaches fermentation with the same lactic acid bacteria as applicants. Therefore, absent any convincing evidence to the contrary, it appears that Kaaber's fermentation with lactic acid bacteria would also have resulted in a similar reduction in formation of acrylamide

as that of applicants. Health Canada and Grivas further teach that acrylamide formation has been undesirable and that acrylamide formation relates to a reaction involving reducing sugars. It is also noted that, on the top of page 17, Grivas also teaches that increased concentrations of reducing sugars have resulted in increased formation of acrylamide.

11. On page 11 of the response, applicants assert that when French fry potato cuts are fermented with a lactic acid producing bacterium, the reduction in acrylamide levels are unexpectedly high and that this fermentation would result in a reduction of acrylamide in the final product of up to 94%. This is not persuasive, especially since both Kaaber and applicants employ the same lactic acid bacteria and since Kaaber encompasses applicants' fermentation time. Furthermore, it is noted that the example in applicants' specification indicates that the reduction in acrylamide was about 38%. Also, it is not seen that the particular cut of potato would have provided a patentable distinction over Kaaber since Kaaber already teaches deep frying cuts of potato, and since how one chooses to cut the potato would have been a matter of choice based on the particular potato based, fried product that was desired.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VIREN THAKUR whose telephone number is (571)272-6694. The examiner can normally be reached on Monday through Friday from 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. T./
Examiner, Art Unit 1782

/Jennifer C McNeil/
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